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Forestry in the Constitution of the State of New York.

THE conviction that it is a public duty to take positive measures for preserving our forests is certainly becoming more strong and general. This is demonstrated by the fact that a body of representative men like those assembled in the Constitutional Convention, now sitting in Albany, have appointed a special committee to make some provision for the future of the forests of the state in its organic law. Not only has such committee been appointed, but it has proposed an amendment to the constitution, which has now been advanced to a third reading, and provides that all the lands of the state which have been taken or shall be acquired as a forest-reservation shall be forever kept as wild forest land; that they shall never be leased nor sold, and that no timber thereon shall ever be cut or sold. The adoption of such an amendment would certainly put a stop to some evils which we have deplored. We have stated in these columns that the policy of the present commission which encourages the selling of standing Spruce above a certain size is vicious in its essence, and that if carried out it will work the ultimate ruin of a large portion of the forest-cover. But we also believe, and we have so argued, that a comprehensive and systematic plan of forest-management can be devised which will permit the cutting of trees without interfering with the value of the North Woods as conservators of the water-supply, which is, without doubt, their most important function in the state. We hold that no necessity exists for sacrificing the value of the forests in one direction in order to preserve their value in another. The absolute prohibition of cutting any wood from the state preserve means actual and reprehensible waste. Experience has proved, beyond question, that under proper management a forest can yield its products which are indispensable to civilized men, and can even grow in productiveness every year, while its beneficent influences on soil, climate and water-supply will remain wholly unimpaired.

Against this position it is argued that while the state forests might be maintained both as a source of timber-supply and as a protective cover for the watershed under an ideal management, as a matter of fact no such management can be hoped for while legislatures are constituted as they now are, and the only way to keep the woods from destruction is to forbid altogether the entrance of the axe. And there is, it must be admitted, ground for apprehension in this respect. As we understand the laws now existing, the state forests are soon to be handed over to the charge of the so-called Agricultural Department, which is generally considered more dangerous and inefficient than are the present administrators. But, after all, somebody must be trusted. In spite of constitutions and laws, our faith must ultimately rest upon the intelligence of the people and their ability to select agents who will do their will. There is no justification in reason or in morals for preventing the people of the state from using what is their own from fear that they will fail, through ignorance or greed, to use it to the best purpose. It is true that our forests have been shamefully abused; that we have wasted much more than we could use, and that even now there is no adequate recognition of their real value among the people. The members of the Constitutional Convention must admit, however, that they, as individuals, have learned to appreciate them thoroughly. They are permitted to hope, therefore, that the people and their representatives in the Legislature will in time become educated up to the same level. Until this time arrives the woods will not be safe even under the protection of a new constitution. Without an enlightened public sentiment which operates directly on the administration of the forest, the same waste, the same robbery, the same destruction by fire will continue in spite of statutes.

It is gratifying to know that the American Forestry Association, a body which has been criticised sometimes for having a sentimental dread of tree-cutting, unanimously condemned the proposed amendment at their meeting last week in the White Mountains. The reasons for their protest against this amendment seem to us entirely sound. In the first place, a constitution lays down the broad policy upon which all legislation must be based. It is a declaration of principles which are to endure while laws in conformity with them are enacted, amended and repealed in obedience to temporary demands. It is plain, therefore, that organic law should not descend to specifications; at least, it is plain that it should not prescribe methods of technical management. It is not the function of a constitution to hamper legislation, but to give it scope and efficacy. But if we grant that the regulation of forestry practice is proper subject-matter for such an instrument, we must admit that here, if anywhere, such a subject should be treated broadly and in accord with scientific truth. Now, this proposed amendment ignores the fact that there is, or can be, any such thing as rational forest-management. One would infer from the declaration of the constitution makers that the interest of the people and of the lumbermen are inevitably at war with one another, whereas the lumberman, as much as any other man, has an interest in good forestry, and it is to no man's ultimate advantage to allow forest-products to go to waste. This certainly is a serious misconception of the true relation of the forest to civilized society, and it would be a grievous error to embody such a doctrine in a state constitution. The cause of forestry is not advanced, but hindered and hampered, by the dissemination of such false notions.

It hardly needs to be stated that we are not advocating the use of the axe, except under skilled control. Not a tree should be cut until some forward-looking and well-considered forest-policy has been adopted, and some plan of forest-management based on scientific principle has been assured. There are men in this country with sufficient skill and experience to devise such a plan and to carry it forward into successful execution. The North Woods, from their constitution and situation, are admirably adapted to proper forest-management, and it would be a calamity if this was prohibited. We see no more reason why the state of New York should prohibit forever the cutting of its forest-trees than that the same absolute prohibition should

be made on the national domain. Thoughtful people are more and more impressed with the necessity of protecting our forests, and the more widely their manifold uses are realized the stronger will be the desire of all the people to foster them. The spectacle of a great forest yielding out of its abundance nothing except a thin layer of fertility to the soil every year is not an improving one. Letting it out in five-acre patches to campers who can pay for such privileges is not using it to the highest general advantage. The spectacle of wasted timber is as demoralizing as the spectacle of any other public property destroyed. The North Woods, managed by competent foresters, would do much more than yield a little revenue to the state. They would serve as an object-lesson of incalculable value and do more to correct the opinions and direct the purpose and practice of the people at large in matters pertaining to forest economy than volumes of essays on the subject by amateurs. True, we cannot hope that such a management will be organized at once; but we ought not to lose faith in its possible coming. At all events, it is not the part of wisdom to try to prevent or delay its coming by constitutional enactment.

Irrigation in City Parks.

THE visitor to Central Park in these days will hardly be surprised to see, after the long period of drought, that the leaves are dropping from shrubs and trees, and that many of the open spaces show no trace of that peculiarly refreshing green which a stretch of well-kept turf alone presents. Most of the trees and shrubs will recover, although the foliage of some of the trees which stand on a thin layer of soil spread over solid rock has more than a merely ripened and dried appearance, and looks as if it had been actually scorched by a fire. But even if the fall rains suffice to revive the grass, and if every tree and shrub should push forth its leaves next spring as vigorously as if it had not gone through the fiery trial of such a July and August as we have just passed, the fact remains that the park for something like two months has been far from furnishing its full possible measure of delight to the eye and to the imagination. That is, the park has lost a great part of its attractiveness for one-third of the growing season of the year.

Now, all this could have been prevented by irrigation. The simple application of water in sufficient quantities would have kept every lawn smiling and every thicket and wood-border in full verdure the whole summer through, and in such a season as this, when all the country is parched brown, this stretch of greenery in the midst of the city would have been doubly refreshing. Spaces of smooth green turf are essential elements in every pastoral picture; and since the city has gone to the enormous expense of blasting down rocky ridges and covering them over with mold to make these green fields, it is a shameful waste to allow their beauty to fade away just when it is most needed. Of course, few summers have ever been as trying as the one we have just passed, but almost every year the park meadows are dead and brown when they should be clothed in living green. For some unknown reason, park commissioners and apportionment boards can never be made to realize the necessity of watering and fertilizing in a park. They will vote money for building new entrances or new bridges, or for any amount of construction, but they are seized with a fit of economy whenever it is suggested that the health and vigor of the vegetable life in a park must be provided for; and yet upon the richness of this life the beauty and usefulness of a park primarily depends.

The lower portion of Central Park, which was constructed first, was partially provided with facilities for watering, and here are many irrigated spots and strips which show how delightful the whole park now might be if it had all been similarly treated. Liberal apportionments have been made for park maintenance in some directions. The newly graveled roads seem as good as roads can be made. The borders have been freshly turfed, their edges trimly cut, and the carts which sprinkle the roadways have also moistened them until they are nearly perfect. But the little patches and streaks of green, where water has been applied, only serve to emphasize the dreariness and death by which they are surrounded. In the northern part of the park, where there are no facilities for watering, except immediately along the roadways, there are whole acres where no grass can be seen, and on the lawn-tennis ground, in spite of the fact that it is watered by carts as much as possible, the players actually raise a dust in running over the so-called turf. Of course, the trampling here helps to kill the grass, but on the baseball ground, where games are played twice a week, the sward is green, because there are facilities for watering it partially. As an evidence of the beneficent effects of irrigation one has only to glance at the chain of small parks in Fourth Avenue, where the shrubs are holding all their leaves and the grass is a vivid green even on the thin soil over the tunnel. On the other hand, Morningside Park is a picture of desolation which it is painful to behold. A feeble attempt at watering the lower portions of this park has been made by attaching hose to one of the city hydrants far beyond the limits of the park, and last week we saw several men doing the best they could with a reach of hose a thousand feet long. But this is slow and ineffectual work, and it is a wonder that any of the shrubs on the rocky slope are alive.

Now, the lesson of all this is that no city park ought to be called finished until adequate provision is made for watering every inch of it. Central Park needs from thirty to forty thousand feet of piping under the ground to supply its present deficiencies, besides fifteen to twenty thousand feet of rubber hose. With such a plant a very small force, working systematically, could do effectively what four times as many men are now trying to do and making an utter failure. It is easy to see how large an area one man could attend to regularly and systematically if he had the proper machinery, and how in this way a perfect record could be kept showing just when a given space had been watered, and just how much was given to it. There may have been some excuse for dribbling out an inadequate water-supply to the parks when water was said to be scarce, although there seems no reason why the city should not deal with the parks in this respect as liberally as with any similar area in its thickly populated portions. There is no lack of water now, however, and there is no one thing that Central Park and Morningside need so much as proper facilities for applying it.

The Minnesota Forest Fires of September First.

INASMUCH as I have been moving about through the forest here all summer, and especially on the 1st of September, when the disasters culminated in the general outburst, it seems my duty to make a statement of the conditions under which it occurred.

Ever since fires would first run through the woods last spring settlers have been starting fires to clear land, parties camping in the woods have permitted fires to escape them, cinders from locomotives have been kindling fires along the railroads. Owing to the prolonged drought, but few of these fires had become entirely extinct, but had lingered in stumps, logs, muck and peat, creeping slowly through the forest, killing trees over wide areas, and extending their frontage until there was hardly a district in the wooded and the inhabited region that did not have a fire burning somewhere within it. All the dead material in the forest had become so dry that when pulverized and sprinkled over a flame it would ignite with an explosive flash like gunpowder.

Besides the dry material in the unburned forest there was a vast amount of charred and tinder-like matter, scorched by previous fires. To this add the dry leaves of the trees that had been killed, and conditions were at hand for the general outburst that occurred soon after noon of September

1st, when the hot dry wind that had been blowing all day from the south-west increased to a gale, and in some localities became a hurricane. The air was filled with combustible dust and the gases distilled by smouldering fires, so that to the smallest burning leaf or twig on a tree-top a great flame seemed attached, and large masses of flame would often break away from all contact with fixed material, whirl through the air for long distances and ignite the leaves in other tree-tops so quickly that it seemed almost a spontaneous combustion. Nothing that could burn was safe within half a mile of the forest, as was proved by the burning of villages, railroad-trains, cross-ties in the track, and the loss of many human lives.

The number of persons killed is at this date, September 3d, impossible to ascertain, but will possibly reach a thousand in Carlton and Pine counties. Thousands of cattle have also perished, millions of acres of timber have been killed, an inestimable amount of timber and lumber have been burned, and the promising growth of young forest and its valuable influences have been destroyed. The latter item is usually not considered or is placed at a very low value, but in far-reaching and true economy it should rank next to the loss of human life.

The entire disaster was due to man's ignorance, carelessness and viciousness, and was, therefore, preventable by instruction, caution and coercion.

Carlton, Minn. *H. B. Ayres.*

Foreign Correspondence.

London Letter.

RHODODENDRON FORDII.—This is a new species from Lantas Island, Kwangtung, China, having been discovered and introduced by Mr. Ford, the superintendent of the Botanic Garden, Hong Kong, after whom it was named, and described in the *Kew Bulletin* by Mr. Hemsley in January last. It is related to R. Fortunei and has dark green leathery obovate leaves, three inches long, clothing woody branches, which are terminated by loose clusters of five-lobed ten-stamened flowers two inches across. It is likely to prove hardy and promises to be a useful addition to the Chinese representatives of this genus in cultivation.

SAINTPAULIA IONANTHA.—I again refer to this delightful little African Gesneriad to recommend it for its free growth and free-flowering character in an ordinary stove, and also to inform your readers that it is easily multiplied by means of leaf-cuttings. Every leaf put in now will form a good plant by next summer.

SCUTELLARIA FORMOSANA.—From what I know of this new species there is little chance that it will ever justify its description as a good plant for decorative purposes. It is a native of Formosa and has been introduced by Messrs. J. Veitch & Sons, with whom I saw it in flower a few days ago. It has straggling stems a foot long, ovate leaves nearly two inches long, and terminal erect racemes, four inches long, of slender tubular flowers an inch long, colored blue and white.

DRACÆNA GODSEFFIANA.—Having flowered and fruited, this plant has been accepted by Mr. Baker as a good species allied to D. surculosa, with which some authorities last year tried to prove it identical. It is a distinct plant, at present only a foot high, with obovate cuspidate leaves three inches long, colored bright green, with cream-yellow spots, suggesting the variegation of Aucuba Japonica. The flowers are small and greenish and the fruit is a round berry an inch in diameter, colored rich orange when ripe. It is a native of Lagos.

THUNBERGIA GRANDIFLORA is not a new plant, but it is so rarely grown that a well-flowered example of it, such as may be seen in a stove at Kew, excites as much admiration, even among cultivators, as if it were a new introduction. Planted out in good soil and trained along the rafters so that finally its shoots can down-hang a yard or two, it becomes a picture of great beauty when the flowers, borne in axillary clusters, hang as thick as bunched onions. Each flower is three inches long and broad, and its color is lilac-blue, paler in the throat. There is also in flower at Kew a variety of it with pure white flowers. The type was introduced from India, where it is a native, in 1820, but the variety has only recently been introduced to Kew from Calcutta. We have no better stove climbers than these two, nor any more easily cultivated.

STREPTOCARPUSES.—These plants are being greatly improved every year under the skillful cross-breeding and selection of Messrs. J. Veitch & Sons. This year their seedlings are beautiful, much finer than any hitherto produced, the range of color being greater and the size of the blooms larger; moreover, the plants have well-balanced leafage. Some of the seedlings have flowers of the clearest rose-red, with dark pencilings in the throat, one seedling in particular being of the clearest crimson color. There are numerous variations among the whites, purples and blues. Messrs. Veitch grow these plants in thousands, planted out in a large lean-to frame facing south. They seed freely, and the seeds are mixed and sold so that a packet would contain all the colors at present raised. The great value of these Streptocarpuses is in their thriving well and flowering freely in a stove, intermediate or cool greenhouse. They are better planted in a border than when grown in pots.

FUCHSIAS AND TUBEROUS BEGONIAS.—One of the most attractive houses in the Veitchian nurseries at Chelsea is filled with Fuchsias and Begonias. The Fuchsias are trained along the rafters, which they completely hide with their shoots, and the flowers hang in arch-like festoons over the Begonias, which crowd the stages, and comprise all the colors and all the best forms of these plants. Nothing looks, and nothing is, easier than the production of a display of this kind, and the plants look perfectly at home. Fuchsias are not utilized as rafter or roof climbers to the extent that they deserve. At Kew they are a feature in the conservatory, where they are planted out in the side borders and their stems trained along the rafters up to the ridge. The lateral shoots are cut in hard every spring, and this induces the plants to develop plenty of shoots, which are semi-pendent, and flower profusely.

AN IMPROVED GREENHOUSE.—The gridiron-like stages over rows of hot-water pipes and the red flower-pot are the ugly features of the ordinary plant-house. But these may be improved upon by the adoption of the plan of two houses in the nursery of Messrs. J. Veitch & Sons, one for the display of Orchids when in flower, the other for choice greenhouse-plants. The inside of the house is a series of irregular rockeries and masses of virgin cork forming numerous pockets and ledges, the whole being "toned" with the clinging stems of Ficus minima, Selaginellas, Pellionias, and such like plants, with tufts of Ferns here and there. These form a most effective background to the special things on exhibition, which, although mostly in pots, are cunningly hidden under Fern-fronds, the effect being a perfectly natural arrangement, infinitely more pleasing as a picture than the ordinary house, while each plant is seen to the best advantage. A slight modification of this arrangement would make the best of all indoor styles of gardening, for the amateur, at any rate.

THE TEMPERATE HOUSE AT KEW.—A photograph of the interior of this fine house was published in GARDEN AND FOREST in 1892, page 401, and the dimensions and history of the house were given in a note which I wrote to accompany it. Only a portion of the original design was carried out in 1863, when the present house was built, but, even as it stands, the structure is probably the finest ever erected for the cultivation of temperate plants. It has now been decided to finish the house, which will mean an addition equal to about half of its present dimensions, and the cost of which will be £12,000. The total length of the completed building will be 582 feet, and its superficies nearly 50,000 feet, or one and three-quarter acres. It will stand on a terrace four feet high, and will consist of a centre connected with two wings by two smaller octagonal

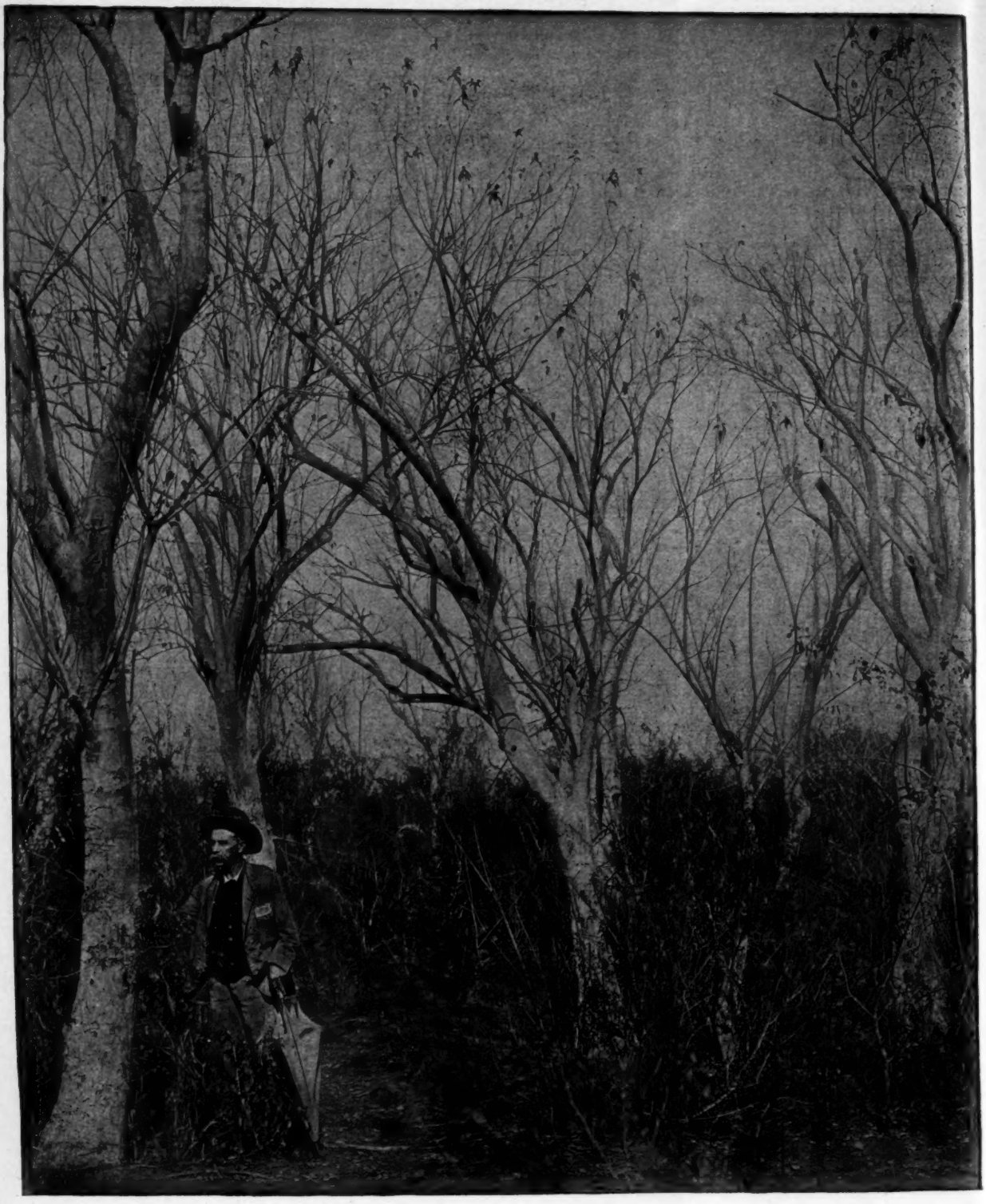

Fig. 58.—A grove of Tree Ipomœas, in Mexico.—See page 366.

conservatories. The new wings are to be devoted to plants requiring an intermediate temperature.

"Sylviculture in Britain" was the subject of a long and important paper by Professor Bayley Balfour at the meeting of the British Association, held at Oxford last week. He deplored the neglect of forestry on the part of British landowners, and urged the Government to take up the matter by making an experimental forest, or a series of forests, for the production of timber for the supply of the English market and as a teaching-school of forestry. He pointed out

Fig. 59.—A branch of Ipomœa Wolcottiana.—See page 367.

a, flowering branch; *b*, flower; *c*, capsule and calyx; *d*, capsule with two valves removed; *e*, seed; *f*, ventral side of the same with coma removed—all slightly reduced.

that, although the foreign supply is sufficient for our needs at present, the time will come when this will lessen. At present British cultivators generally were, he said, in ignorance of the science of sylviculture, and, consequently, what little we do now is done badly. On the other hand, it has been demonstrated more than once that to devote land in

Britain to the cultivation of timber-trees for profit, in the face of foreign competition, is as hopeless an undertaking as that of fruit or vegetables on a large scale here.

If it could be clearly shown that there is money in timber-growing in Britain there are hundreds of landowners who would plant up their wasted fields with whatever was likely to be in demand. The few who have good timber for sale now can hardly sell it at a profit. The Government may be induced to make the experiment, but without protection it would scarcely clear expenses. All that science can do is powerless so long as the British market, the best in the world we are told, is open to all comers. For the consumer things are best left as they are, but it is futile to invite the broken-down farmer and landowner to plant Pine and Oak and Ash for wood, or Apples and Pears for fruit, in the hope that the prices he will get for his produce will set him on his legs again. I know one clever cultivator who tried hard for many years to make fruit-growing in England pay, but, although his land was good, he lost heavily on what he now calls his insane investment.

London. *W. Watson.*

New or Little-known Plants.

Some Notes on the Tree Ipomœas of Mexico.

DR. EDWARD PALMER has frequently observed in western Mexico groves of the Tree Ipomœas and has several times collected specimens. He has always believed that there was more than one species, but scanty herbarium material has prevented my giving the subject the proper study.

While at Culiacan in 1891, Dr. Palmer procured a photograph of one of these groves, which is reproduced on page 364. These are among the most beautiful flowering trees of Mexico, and being of no commercial value are allowed to grow while other trees are cut out. They, therefore, form a characteristic feature of the landscape. Curiously enough, none of these trees have yet been cultivated, although they ought to be found in our larger greenhouses and in the open gardens of our warmer southern states. I call attention to them, therefore, with a desire that some effort may be made to introduce them into cultivation. Dr. Palmer will soon visit this region again, and it is to be hoped that some arrangements may be made by which small trees or seeds may be sent to this country. He did procure a few seeds in 1891 at Manzanillo, but not being quite mature they did not germinate.

A careful examination of the material obtained by Dr. Palmer in the last few years seems to show three good species of the group. Add to these the well-known Ipomœa murucoides, and the introduced species, I. fistulosa, gives us five species for Mexico.

Ipomœa fistulosa.—This species* was originally described from Brazil. It is reported by Mr. Hemsley as native in Guatemala and Panama, but I am not aware that it is found in Mexico outside of cultivation. It seems to be frequently planted in Mexican gardens, and has occasionally been reported from Texas. Several years ago Mr. G. C. Nealley obtained some seed for the Department of Agriculture, which was distributed. Mrs. H. L. T. Wolcott succeeded in growing several plants. One of these, which she turned over to me, is now growing in one of the Department greenhouses. The plant began to flower when only a foot high, and the species is, doubtless, an abundant bloomer. Our specimen is now about five feet high, and although it has not since bloomed, this is doubtless due to lack of proper conditions.

The tree is known in Brazil under the names of "Canudo" and "Matta-Cabra."

Ipomœa murucoides.—This species* is the best known and of the widest distribution of all the Tree Ipomœas. The flower-buds are rather coarse and homely, but the open flowers are large and handsome. I have not been able to learn whether this species is now in cultivation. Kunth, in 1825, speaks of a large tree in cultivation in Spain. The only illustration of the species which I have seen is a colored lithograph in the *Biologia Centrali-Americana*, vol. ii., Tab. 61. The tree is known to the Mexicans by the name of "Guansaguate" or "Cazahute." It seems to be common in Mexico and ranges from northern Mexico to Guatemala.

Ipomœa arborescens.—The illustration represents the little-known plant first collected by Humboldt in southern Mexico. It was not again reported until Seemann obtained it near Mazatlan. I have seen neither of these specimens, but, through the kindness of Dr. A. Engler, I have had Dr. Palmer's plant compared with the type now at Berlin, who states that "it is identical with I. arborescens collected by Humboldt." The plant collected by Seemann is evidently the same as the one obtained by W. G. Wright from Mazatlan in 1888.

Mr. W. Botting Hemsley has also identified Palmer's plant as the Argyreia (?) oblonga. This plant was collected by Dr. Sinclair some time between the years 1836 and 1842 at Tepic, and described in the *Botany of the Voyage of the Sulphur* under the above name. Our specimens differ somewhat from Mr. Bentham's description, especially as to the habit of the plant, the base of the leaves and the inner surface of the sepals. This may be accounted for by the paucity of his material. Dr. Palmer collected specimens at Alamos in 1890, and both Mr. Hartman and Mr. Lloyd, of Dr. Lumholtz's Archæological Expedition, obtained specimens in the state of Sonora.

This species† ranges along the foot-hills of the Sierre Madre from Tepic to Alamos. The rarity of the species in our collections has been due, therefore, not to the rarity of the species itself, but to the fact that so few collectors have visited this region. The tree grows to the height of six to nine meters (twenty to thirty feet), with a trunk three centimeters (one foot) in diameter. It has a smooth gray bark and numerous branches; the leaves are ovate, slightly cordate at base and more or less pubes-

* Ipomœa fistulosa, Mart. in DC. *Prod.*, ix., 349 (1845); Seem. *Bot. Her.*, 171 (1854): Meissn. in Mart. *Fl. Bras.*, vii., 239, t. 81 (1869); Hemsl. *Biol. Cent.-Amer.*, ii., 387 (1882); Coult. *Contr. Nat. Herb*, ii., 292 (1892).

Batatas crassicaulis, Benth. *Bot. Voy. Sulph.*, 134 (1844).

Ipomœa Texana, Coul., *Contr. Nat. Herb.*, i., 45 (1890).

A high shrub, perhaps sometimes arborescent; younger parts puberulent, early becoming glabrate; leaves sagittate, acuminate, strongly cordate or sometimes nearly truncate at base, 3-7 to 15. cm. (2¼ to 6 inches) long; petioles slender; peduncles shorter than the leaves; cymes single or compound; sepals oval, 6 to 7 mm. (3 to 3¼ lines) long, obtuse or retuse, glabrous within, puberulent without; corolla pink, pubescent without, 5 to 7.5 cm. (2 to 3 inches) long; seeds 8 mm. (4 lines) long, covered with long black hairs. Native in Brazil and Peru and extending into Central America; cultivated in Mexico and Texas. Specimens have been examined from the following places:

Texas, Brownville (G. C. Nealley, 1891); Santa Maria (G. C. Nealley, 1889); Mexico, Monterey (Charles K. Dodge, April, 1891); Nicaragua (C. Wright, 1853-6).

* Ipomœa murucoides, Roem et Schult. *Syst.*, iv., 248 (1819); DC. *Prod.*, ix., 358 (1845); Hemsl. *Biol. Cent.-Amer.*, ii., 290 (1882); Smith, *Fl. Guatm.*, Pt. 2, 50 (1891); *Index Kew*, Pt. 2, 1246 (1894).

Convolvulus macranthus, H. B. K., *Nov. Gen. et Spec.*, iii., 95 (1818).

I. macrantha G. Don. *Gen. Syst.*, iv., 267 (1838).

Large tree; leaves oblong to linear-lanceolate, 7.5 to 12.5 cm. (3 to 7 inches) long, rounded at base, long acuminate, tardily glabrate; petioles 12 to 36 mm. (6 to 18 lines) long; flowers either axillary or in cymose clusters; peduncles, 2.5 to 6.2 cm. (1 to 2½ inches) long; calyx deeply five-parted, clothed externally with white wool; sepals somewhat unequal, 18 to 25 mm. (9 to 12 lines) long; corolla white, large, 7.5 cm. (3 inches) long, with broad throat; stamens included; carpels oblong, 25 mm. (1 inch) long, glabrous; seeds triangular, 10 mm. (5 lines) long, light brown, the angles clothed with long hairs.

Specimens have been examined from the following places:

Guadalupe (Bilimex, September, 1869; September, 1867, No. 273; Bourgeau, September, 1865-6, No. 790). Mexico, locality uncertain (Dr. J. Gregg, 1848-9, No. 592; Berlandier, November, 1827, No. 1229); Guatemala (Captain John Donnell Smith, February, 1890, No. 1863); Cannibal (W. C. Shannon, December, 1891, No. 417).

† Ipomœa arborescens, Don. *Gen. Syst.*, iv., 267 (1838); *DC. Prod.*, ix., 358 (1845); Hemsl. *Biol. Cent.-Amer.*, ii., 383 (1882); Seemann, *Bot. Herald*, 319 (1856).

Convolvulus arborescens, H. B. K., *Gen. et Spec.*, iii., 94 (1818).

Argyreia (?) oblonga, Benth. *Bot. Voy. Sulph.*, 133 (1844).

Ipomœa oblonga, Hemsl. *Biol. Cent.-Amer.*, ii., 391 (1882).

Ipomœa murucoides, var. glabrata, Rose (not Gray), *Contr. Nat. Herb.*, i., 107 (1891). A tree 9 meters (30 feet) high; leaves ovate, 5 to 10 cm. (2 to 4 inches) long, cordate at base, acute, very pubescent at first, but becoming nearly glabrate; petioles 5 to 7.5 cm. (2 to 3 inches) long; sepals oval, obtuse, 6 to 10 mm. (3 to 15 lines) long, pubescent both within and without, in age becoming glabrate without; corolla white, yellowish below, about 5 cm. (2 inches) long, with rather narrow, funnel-formed throat; capsule 20 mm. (10 lines) long; seeds 10 mm. (5 lines) long.

Specimens from the following places have been examined:

Sonora, Alamos (Palmer, March 20th to April 8th, 1890, No. 316); Tourbabi (C. E. Lloyd, November 19th, 1890, No. 268); Bacadehuachi (C. V. Hartman, November 10th, 1890, No. 268); Las Durasnillas (T. S. Brandegee, 1892); Mazatlan (W. G. Wright, January, 1889, No. 268).

The following specimens, which I have not seen, belong here:

Humboldt and Bonpland type of Convolvulus arborescens collected between Acapulsotla and Chilpancingo. Seemann's No. 459 collected on the "road from Mazatlan to Sebastian." The type of Argyreia oblonga collected by Sinclair at Tepic.

cent. The flowers, which are white, are produced in great profusion, and appear before the leaves. The following note has been furnished me by Dr. Palmer:

This tree is one of the most noticeable features of the landscape between Alamos, Sonora, and Sinaloa, Culiacan, especially about the latter place, where it is the tree of all trees seen. A stranger may ask, why there are so few other trees and so many of this. The answer is: This tree cannot be used as timber or for fuel, since it burns like straw. The ashes are sometimes used in soap-making. Thus the tree is left to beautify the country; its smooth gray-white body, without any leaves in winter, is quite noticeable. It is then an object of attraction to all domestic and wild animals, for it produces an immense supply of buds and flowers, which are very sweet, all of which are eagerly devoured. The tops are often cut off so that animals may feed upon them, since in winter other vegetation is of the driest kind, and these fresh buds and flowers are a welcome relish. The ground underneath is well tramped by the animals looking after the individual interests of their stomachs. It is next to impossible to make botanical specimens so as to show the number of buds and flowers on the branches, for they readily drop off. When a group of trees are in bloom it forms a beautiful sight. No green leaves obscure their glory. At the time of the full bloom no other plant competes with it in number of beautiful flowers. This is the more interesting because if the tree was like most other trees, useful for timber and fuel, it would be scarce. As a compensation nature has made it a food for animals at the time of scarcity and given it an abundance of beautiful flowers.

IPOMŒA INTRAPILOSA.—Very little is known regarding this species.* It has probably a much less limited range than I. arborescens. It was first collected by Dr. Palmer in 1886 and by Mr. Pringle in 1889. It is described as "an irregular-growing tree, twenty to thirty feet high." The corolla is larger than in I. arborescens, and with the branches and leaves completely glabrous. This tree was first considered as a variety of murucoides by Dr. Gray, but a study of more material seems to justify me in raising it to specific rank.

This species, like the others, would, doubtless, be a very attractive plant in cultivation.

IPOMŒA WOLCOTTIANA.—This species† (see p. 365) has only been reported from Manzanillo, in the state of Colima. Here Dr. Palmer obtained specimens in 1891. It is undoubtedly the most graceful species of the group. The tree has a very large top, and the branches are long and nearly pendent, covered with an abundance of flowers and buds. As stated above, Dr. Palmer obtained seed of this species, and although every effort was made to germinate them, it was without avail. Not only was I unsuccessful in growing the seeds, but a part were sent to Mrs. H. L. T. Wolcott, at Halifax, Massachusetts, who gave them the most careful attention, but without success. Not only in her efforts in attempting to raise this tree, but for her success in growing a number of interesting Mexican plants, I have named the above species in her honor.

The following dichotomous key seems to contain the most usable characters:

A. Seeds covered with short black hairs.
Ipomœa fistulosa.
AA. Seeds with long white hairs only on the angles.
B. Calyx large, clothed externally with white wool; corolla woolly without.
Ipomœa murucoides.
BB. Calyx small, not woolly externally; corolla glabrous without.
C. Leaves slightly cordate at base, young parts of stems and leaves (especially beneath) pubescent; sepals pubescent without, at least when young, and tardily glabrate.
Ipomœa arborescens.
CC. Leaves rounded at base, glabrous; young parts of stems minutely pubescent and early glabrate; sepals glabrous without.
D. Sepals hairy within, larger than the next, acutish; pedicels elongated, sometimes one and a half inches long, thickened above; branches erect; corolla, with broad funnel-formed throat, two inches long; stamens at length exserted; filament broad, with a tuft of long hairs near the base.
Ipomœa intrapilosa.
DD. Sepals glabrous both within and without, small, obtuse; pedicels short, slender; corolla salver-formed, with broad throat; proper tube very short; stamens included; filament narrow, with a small tuft of short glandular hairs.
Ipomœa Wolcottiana.

I wish to express my gratitude for aid received in the preparation of this paper from the following gentlemen: Professor A. Dugés, Dr. A. Engler, Mr. W. Botting Hemsley, Dr. B. L. Robinson, Capt. John Donnell Smith.

Dept. of Agriculture, Washington, D. C. *I. N. Rose.*

Plant Notes.

GERARDIA PURPUREA.—It seems a pity that plants with such beautiful flowers as some of our Gerardias should have the habit of attaching their rootlets to the bark of the roots of neighboring plants and living on their sap. True, they are not entirely parasitic, but they can hardly get along without robbing some other plant, and this depraved tendency is enough to banish them from gardens. Nevertheless, there are places in wild gardens where they are most effective. In the low grounds of some of our southern states the Purple Gerardia often covers entire acres, and becomes a very distinct feature in the landscape. It is naturally a low, spreading plant, not much more than a foot high, with very slender stems and linear leaves, with flowers about the size of a Maurandya-blossom, and quite as handsome. When growing in tall grass the support thus received lifts it up considerably higher, and it is among the grasses and strong-growing plants along water borders, where natural effect is desired, that these plants are very useful. When Mr. Nash reclaimed his swamp in Clifton, New Jersey (see vol. v., page 494), he took pieces of sod from different places in the neighborhood and set them along the borders of his Lily-ponds. Among these were plants of this Gerardia, and they have a lightness and grace which adds much to the fringe of wild beauty along the bank. Wherever any natural planting is wanted along the banks of a stream or pond this Purple Gerardia should not be neglected.

CYTISUS NIGRICANS.—We have none too many dwarf flowering shrubs, especially such as flower in midsummer and later, and it is, therefore, somewhat surprising that this old plant, which was introduced into English gardens more than a hundred and fifty years ago, and which is perfectly hardy in this country, is not more generally used. If it is cut back for a few years when it is young, until it becomes somewhat stocky, it will make a rather broad bush not more than two feet high, but of much neater habit than if left to itself, when it is apt to be twiggy. Its pea-shaped flowers are a bright yellow, and are borne in long upright racemes. It is a desirable plant all the season

* Ipomœa intrapilosa, Rose.
Ipomœa murucoides, var. glabrata, Gray, *Proc. Amer. Acad.*, xxii., 440 (1887). "A large irregular-growing tree, twenty to thirty feet high," nearly glabrous throughout; leaves triangular, shortly acuminate or sometimes nearly oval and obtuse, truncate or a little rounded at base, 5 to 10 cm. (2 to 4 inches) long, petioles 5 to 7.5 cm. (2 to 3 inches) long; calyx deeply five-parted, glabrous without, hairy within; sepals oval, acutish, 12 to 16 mm. (6 to 8 lines) long; corolla white, "with yellow shading at the base of the tube," glabrous without, about 7.5 cm. (3 inches) long; carpels and seeds not seen. Rocky hillsides; only known from the state of Jalisco.
Dr. Gray, after describing the variety, made the following remark, "Palmer's specimens are glabrous or very early glabrate, even to the calyx; indeed, even the corolla is almost glabrous in the bud. The calyx is short, the leaves acuminate, and the petioles elongated (two or nearly three inches long)." Except as to the acumination of the leaves, these characteristics are opposed to I. murucoides. The very inappropriate name, glabrata, has not been used, as it has previously been employed by Meissner in *Flora Brasilliensis*, iii., 226.
Specimens from the following places have been examined:
Jalisco, Chapala (Palmer, October-November, 1886, No. 703); near Guadalajara (Pringle, December 14th, 1889, No. 2443).

† Ipomœa Wolcottiana, Rose, sp. nov. A tree nine meters (thirty feet) high, with a trunk sometimes three dm. (one foot) in diameter; branches slender, somewhat drooping; leaves ovate to ovate-lanceolate, 7.5 to 12.5 cm. (3 to 5 inches) long, 3.7 to 8.7 cm. (1½ to 3½ inches) broad, rounded or truncate at base, acuminate, glabrous on petioles, 5 to 10 cm. (2 to 4 inches) long; flowers in numerous short racemes or corymbs, mostly naked; pedicels jointed near the base, little if at all thickened upward, 8 to 12 mm. (4 to 6 lines) long; calyx 10 to 12 mm. (5 to 6 lines) long, glabrous; sepals nearly equal, oblong or oval rounded at apex; corolla white, broadly campanulate, 6.2 cm. broad, with a short thick tube 3 cm. long; capsule oblong, 18 mm. (9 lines) long, glabrous, two-valved, four-seeded, separating into four carpels; seeds oblong, 8 mm. (4 lines) long, with margins covered with a long reflex coma longer than the seed. Rocky hills.
Manzanillo, Colima (Dr. Edward Palmer, March 2d to 18th, 1891, No. 1349).

through, since its delicate compound leaves turn to a dark plum color in autumn. Cytisus capitatus, another member of the same family, is also a good plant, though not so graceful as C. nigricans. C. purpureus has low procumbent branches, which make a fine show of purple blossoms in May, and remain a long time in flower. This plant is often grafted on some tall-growing species, but its natural trailing habit adapts it to slopes and rock-work, where it is much more interesting than when grown a standard.

Panicum virgatum.—This is one of the handsomest of our native August-flowering Grasses. It is reliably hardy here, and soon forms clumps some three feet or more tall at flowering-time. It has long, flat, narrow leaves and very open panicles of flowers—so large that at last the culm often bends under their weight. The whole appearance of the plant is light and graceful. As will be noticed, it is about the same height as Eulalia gracillima univittata, and during the present dry season has been more attractive than this species, which suffers if not provided with an ample supply of moisture.

Cultural Department.

Filmy Ferns.

THESE beautiful Ferns require but a trial to convince one of their easy cultivation, and there are few classes of plants from which the grower can derive more pleasure. In a healthy condition, the cool, deep moss-green fronds, with gems of dew hanging from every point, are always a pleasant and interesting sight. They do best in a cool shady house at the back of a high wall or in a similar place where sunshine seldom penetrates. But if such a place cannot be provided they will flourish in a shady spot in a cool greenhouse in a pit sunk about two feet below the level of the ground. This should be covered with a frame, shading the glass heavily in summer and lightly in winter, the plants being placed on a staging supported about six inches from the bottom of the pit. The atmosphere must be kept well charged with moisture by sprinkling about inside the frame, where it can be conveniently done without throwing the water over the foliage; for, although Filmy Ferns like moisture and require to be well watered at the root, they should not be damped or syringed from overhead if it is possible to keep them moist without it. If, however, the moisture is not condensing on the fronds as it ought to do, it is better to syringe them than to allow them to become dry, when they would shrivel. They require little or no air, and if given air at all it should be at night or on dull days. The temperature must at all times be kept as cool as possible, and just enough artificial heat used to keep them from freezing in winter.

Some of the dwarfer varieties of these Ferns are especially adapted for cultivation in Fern cases or under bell-glasses in rooms, if placed where the sun does not strike them, and plentifully supplied with moisture. A close atmosphere does not interfere with their growth in the least, and we have seen some beautiful specimens grown in this way of such varieties as Trichomanes radicans, T. reniforme, T. venosum, Hymenophyllum demissum, H. flexuosum and other dwarf sorts. A compost of a very open character is required for Filmy Ferns, a suitable one being equal parts of turfy loam, leaf-mold and fibrous peat, broken sandstone and a few pieces of charcoal. The finer particles should be sifted out so as to leave the material as porous as possible and thus insure the free passage of water and admit air to the roots of the plants.

The Todeas, being strong growers, require to be planted in pots, but for the dwarfer species, with creeping rhizomes, shallow pans will be found more suitable. In all cases good drainage should be provided for several varieties of Todeas, and all the species and varieties of Hymenophyllum and Trichomanes are included under the head of Filmy Ferns, and are generally found in caves and rocky crevices. Todeas are much the stronger growers, and the variety superba has fronds eighteen to twenty inches in length. There are several distinct varieties, but it is impossible to do them justice by word-description or to convey even a faint idea of their beauty to any one not acquainted with them. Of the Trichomanes and Hymenophyllum there are many varieties, ranging from an inch to above a foot in height, and gathered from many different parts of the world. One sort, the beautiful little Trichomanes Petersii, is a native of Carolina, but is very rare. T. radicans Americana is also a North American variety, while several of the Hymenophyllums are found in tropical America.

Tarrytown, N. Y. *William Scott.*

Fall-sowing of Annuals.

IN almost all gardens there will now appear vacant spaces of ground from the time of ripening or the passing over of plants. No time should be lost in the proper tillage of such soil and in preparation for another year. Unless the planting of such places is already otherwise arranged for, they should be sown at once with the seed of hardy annuals for spring-flowering. Some plants are never so vigorous and thrifty as when germinated from seed sown in the fall and allowed to winter out, besides which they flower much earlier in the ensuing year than those grown from seed planted early in the spring. These winter annuals, as I have heard them called, vary in numbers according to the latitude, some of them being more satisfactory south of New York. Here we find the most satisfactory list of such annuals to be Calendula officinalis, Calliopsis Drummondii, Centaureas, Eschscholtzias and Poppies. There are many others, but these are useful and satisfactory flowers, and quite enough at least for a trial. The sooner seeds of these are sown the better. The Calendulas and Eschscholtzias may be slightly covered, and the others mixed with a liberal supply of fine earth and sown broadcast. Under ordinary conditions the seed will soon germinate and make nice little plants before winter. It is scarcely worth while to thin them out as the winter thawings will usually dispose of surplus plants. Without protection there will usually be a nice lot of plants ready to grow away vigorously in the spring and reach a size which will surprise any one not accustomed to this method of cultivation. A fall-sown Calliopsis will fill a space three feet in diameter, while in May and June Poppies are a delight in their vigor and profusion.

It is worth while to make a fall sowing of Mignonette seed which will, however, not germinate before early spring. The plants are apt to be better than those grown from seed sown at the usual planting time, and, besides, in spring one is often hurried and early sowings are deferred too long.

Elizabeth, N. J. *J. N. G.*

Winter Pears.

I SHOULD like to call attention to one of the new Pears, Directeur Alphande, a good grower, but not a well-shaped tree. The tree begins to bear very early, and should be checked by removing nearly all the fruit for a few years. The pear is large to very large and shapely; it ripens in midwinter and is sweet and finely flavored. From what I know of it large trees of this variety promise to be very prolific.

Josephine is another admirable winter pear. The tree begins to bear very early, and in this case also close thinning must be practiced. The vigor of growth is inclined to go all to fruit, and the result is stunted trees. The pears come in bunches. They are shaped like Anjou and keep till April. I had them last winter in fine keeping about as long as I had winter apples. They were stored in bins in a cool cellar with apples. The flavor is hard to distinguish from Anjou. This pear deserves the best attention and widest dissemination.

I have not yet brought to fruit any of Fox's seedlings, but from what I have seen of Colonel Wilder I am confident that it is to be one of our very finest winter pears. P. Barry, a poor grower, is gaining a splendid reputation. It was on exhibition at the Chicago Exposition late in May of 1893.

I have not lost any partiality for Beurre D'Arenberg, another very late winter pear. The tree is a fine grower, very hardy, and generally gives a fair crop. It needs good culture. The pear ranks among the tart kinds, which are very agreeable to many people.

President Mas ripens along with Lawrence. It is a larger pear and with a vinous tone to the juice. Most people might prefer the sweeter Lawrence. They make a good pair. The tree is thrifty, but not vigorous. The fruit is large and pyriform.

By this list, if we begin with Anjou for Christmas, and Lawrence for a little later, we have as complete a list of winter pears as of winter apples, which is what we have needed. There is no reason why our bins shall not be supplied as freely with one fruit as the other. Pear-trees take less room, bear more to the acre, and give a surer crop than Apples. The trouble heretofore has been that we have had few except short keepers that must be sold or used nearly as soon as picked.

As a market fruit we can easily find a place for every winter

pear we can raise. I suggest to apple-growers to turn a part of their attention to pears. They will ship better than apples, and pay a better price. Lawrence has proved very profitable. I have no fruit of any sort that pays better than Anjou. The tree is a model of symmetry and power yearly to bear splendid crops of very large smooth fruit.

Clinton, N. Y. *E. P. Powell.*

The Southern Tomato-blight.

THIS disease was quite prevalent during the season of 1892 among the Tomatoes growing in my garden and also on the experimental grounds at the station. Its first indication is the wilted appearance of the plants, as though from lack of water or from some injury. In many instances the entire plant suddenly wilts; but usually at first it is only the tip ends of the branches that are affected. The wilted portions soon die and dry up and the plant makes a sickly growth. Frequently the disease extends throughout the entire plant, which dies, turns black and dries up.

Last season only a few plants were affected among those growing on our experimental grounds.

We observe that the disease seems to be more prevalent upon land where Tomatoes were grown the preceding year than where new ground is planted. In my own garden last season five rows of Tomatoes were grown, one row of which was planted where Tomatoes were grown the preceding season. That entire row of plants was destroyed by this blight, while there were no indications of the disease among the plants in the remaining rows.

Thus far this year the plants on our grounds are entirely free from the malady, although no precaution has been taken except to plant on new ground. Spraying the plants thoroughly with Bordeaux mixture has been recommended to prevent this disease, but we have not yet tested it for that purpose.

Ag'l Experiment Station, Newark, Del. *M. H. Beckwith.*

Grapes, Good and Bad.—In my list of more than sixty Grapes over half are nearly or quite worthless. Among them are Vergennes, which lacks quality and is tough; Diamond, from its utter instability in ripening; Eaton, from its coarseness and pulpiness; Woodruff Red, from its positively bad quality and lateness of ripening, except in very favorable localities; Jessica, because it is all seeds; Empire State, because as soon as ripe it withers and drops from the stem. There is no excuse for sending out hereafter a grape inferior in bunch, color, beauty or quality to Brighton. Here is a grape that may stand fairly as a standard. It lacks, however, ability to self-pollenize, and it loses flavor soon after ripening. Now give us improved Brightons, improved Wordens, improved Herberts, improved Niagaras, improved or enlarged Delawares, an earlier Jefferson, and a hardy Iona.

Clinton, N. Y. *E. P. P.*

Helianthus mollis.—Under the name of Grandiflorus I lately saw at Mr. W. A. Manda's nursery a variety of this native species, which is noble and distinct in foliage and habit, and bears fine, firm, single flowers about four inches in diameter. The plant flowers at the height of four feet, has hoary leaves and is not at all weedy in habit.

Elizabeth, N. J. *J. N. G.*

Correspondence.

Monœcious or Polygamous Willows.

To the Editor of GARDEN AND FOREST:

Sir,—With reference to the letter by Mr. J. G. Jack, of the Arnold Arboretum, published in your issue of the 25th April last, I am sending you a specimen of Salix elegans, Wall., collected in the north-western Himalayas, in the Jaunsar District, which has both male and female flowers on the same spike. The male flowers are collected on the lower half of the spike, and the female flowers on its upper portion. This species of Salix is common in the north-west Himalayas at elevations of from 7,000 to 10,000 feet, especially on the outer ranges. Specimens with polygamous flowers have been collected at Deota, Deoban and Bodyar, all in the Jaunsar District, so that it may be safely said that the polygamous form is also common. There are several other species of Willow in the Jaunsar district, but no polygamous flowering spikes have as yet been found on any of them.

This species is very commonly attacked, and often almost entirely defoliated by the larvæ of a beetle very closely allied to Melasoma Populi. The imagos of this beetle appear in large numbers about the middle of the month of June. The larvæ themselves are attacked by a species of Tachina, and also by a small green hymenopterous insect, probably one of the chrysididæ.

Imperial Forest Service, Dehra Dun, India. *C. Gilbert Rogers.*

[The specimen sent by our correspondent reminds us of our own Salix rostrata in the general appearance of its leaves; and, like our species, it is said to attain the size of a large shrub or small tree in its native habitat. It is one of twenty-five or thirty species of Willow said to be native to British India. The specimens submitted very plainly show their monœcious character. They are long past the flowering stage, and the fruiting capsules seem nearly mature, but the male flowers are still persisting and entirely cover the basal half of each spike, while the female flowers occupy the upper end. It is of interest to have these specimens from another part of the globe, and we have no doubt that other careful observers will be rewarded by finding many cases with monœcious or polygamous flowers.—ED.]

Hardy Plant Arrangements.

To the Editor of GARDEN AND FOREST:

Sir,—The letter and the editorial article on Herbaceous Borders in your issue for August 22d, embolden me to speak of a floral combination which is now in splendid bloom in my own garden, and which it is a pleasure to possess. It consists of a clump of tall Hibiscus Moscheutos, with stems five feet high and flowers a deep clear rose color, and surrounded by white Japanese Lilies. Altogether, the group seems very effective, and perhaps some of your readers would like to try the arrangement on a larger scale. In early spring this bed was covered with the hardy Primula vulgaris, and the dark velvety flowers were beautiful to see. The leaves of the plants are now lying flat on the ground, overshadowed by the larger plants above them.

Hartford, Conn. *G. N.*

Recent Publications.

Annals of Horticulture in North America for the year 1893. By L. H. Bailey. Orange Judd Co. 1894.

This volume differs somewhat in plan from the earlier ones in the series, because so large a portion of it is devoted to the history of horticulture at the Columbian Exposition. The subject, however, is of sufficient importance to warrant all the attention given to it, but it seems unfortunate that the "special annals" have, therefore, been materially curtailed. It is a misfortune that the demand for such an excellent work as this is not such as to justify the enlargement of this volume so that the usual directories, indexes to literature, obituaries, etc., could have been published as usual. Professor Bailey passed a large part of the summer at the Chicago Fair, and how carefully he studied the horticultural features of the exhibition is known to the readers of GARDEN AND FOREST, for which he prepared an admirable series of descriptive letters. We are glad that many of the facts in this continued correspondence have been collected together, as they constitute the most thorough and impartial record of the exhibition that has been or is likely to be published.

The first chapter, which is on the general subject of Crops and Prices, is much more than a mere schedule of the amount of horticultural produce sold and the money which it commanded. Careful descriptions of new methods of cultivation, of marketing and of exporting are given, while sketches of various features of the fruit industry, fresh notes on such topics as American grapes abroad, the import and export of fruits and of vegetables make instructive reading. The next section treats of such interesting subjects as floriculture in landscape-gardening, the new enterprises and organizations of the year, horticultural education, enemies and diseases of plants, the legal aspects of horticulture as seen in state laws and custom-house decisions. The Columbian Fair then occupies seventy pages, while the so-called special annals and an admirable index complete the volume.

Professor Bailey remarks in his preface that the failure of the rural arts and sciences to take rank abreast of the arts

and sciences in other fields of human progress is largely due to the fact that they lack a permanent and attractive literature. He modestly adds that this series is not expected to supply a want of this sort, and yet it certainly will do much to furnish the data for such a literature. If this series had been begun twenty-five years ago, and carefully carried out in the direction and within the limits now laid down by Professor Bailey, we should have to-day a collection of material which would be invaluable for reference to students of horticulture.

Notes.

Perhaps our readers should be advised that it is Dr. Edward Palmer himself whose portrait appears in the illustration of the grove of Tree Morning-glories on page 364 of this issue.

The beauty of the hips of Rosa rugosa is well known, and not long ago one of our correspondents spoke of their edible qualities. In reference to this last suggestion, a correspondent writes that these fruits are highly valued in France and Germany for their flavor in preserves, soups, marmalades and ices.

There is a certain stiffness about the shrubby Althæas which does not commend them to some persons, but every one must admire the cheerful way in which they endure a drought. Just now, when the foliage is dropping from many sturdy shrubs in parks and gardens, the leaves of the Althæas look fresh and the flowers seem brighter than usual.

It is well known that various Grasses constitute the greater portion of the flora of our western plains and prairies. According to a bulletin of the South Dakota Experiment Station, about 160 species of these are native to that state, and although a few of them are weeds, most of them are more or less useful as forage plants. But, although so many different species of useful Grasses are known, seventy per cent. of the hay from native growth is obtained from less than a dozen species. The same is true of the native pasturage, ninety-five per cent. of which comes from less than twenty different species. In any one locality the number of kinds rarely exceeds half a dozen.

Attention is called by the *Springfield Republican* to one fact in relation to the abandoned farms of Massachusetts which has not been generally considered, which is that many of these farms are being stripped of their timber in a merciless and unnecessary way. Certain people make a business of buying the farms where trees are standing and setting up a steam sawmill at once to turn them into lumber and money. This is a profitable operation for the buyer, who abandons the farm again as soon as he has skinned it. Of course, all this is against public policy, and if any intelligent attention was given to the general welfare there would be authority somewhere to arrest this wanton slaughter of the woods.

The *Gardeners' Magazine* states that an Alpine garden has just been opened by the Botanical Society of Montreux on the summit of Rochers de Naye. The soil of the area devoted to the garden is of good depth and quality, and it is sheltered from the north and east by rocks. Planting was begun late in May last, as soon as the snow had melted, and was completed in June. The new garden is named after Professor Favrat, of Lausanne, who has devoted much attention to the project. It differs from other gardens in which experiments are made with Alpine vegetation in the fact it is on the summit of a mountain, and it will thus assist in solving many problems that could not be studied elsewhere.

On the 7th of August an unusually heavy hail and thunder storm swept over the city of Berlin and its vicinity, and inflicted great damage on all vegetation, practically destroying the fruit-crop. Not only were many fruit-trees uprooted and large branches twisted off of those which remained, but the remnant of fruit which was left on the trees is scarred and gashed so as to be unmarketable. The commercial florists and gardeners have suffered so seriously from the loss of glass and plants that their business for the time seems practically ruined. The disaster to these people has been so serious that the General Secretary of the Association for the Advancement of Horticulture has issued an appeal to professional and amateur gardeners to send contributions of plants, cuttings and any other assistance to the sufferers.

Meehans' Monthly publishes a note from G. M. West, of Michigan, who states that Trillium grandiflorum grows in the hardwood section of the upper peninsula of Michigan in such abundance, and with such luxuriance of habit, size of flowers, purity of color and firmness of texture as can be found nowhere else in the United States. Flowers measuring six inches across are not uncommon. The petals do not turn to dull pink when they ripen, as they usually do elsewhere, but persist in a pure white color. They are usually in full flower on Decoration Day, and are freely used on that occasion. The flower-stalks should be cut when the buds are fully grown, but just before they open, and with long stems; and if taken into a house where they can be kept at a temperature of sixty-five degrees they will not only expand fully, but grow much larger than they do in the woods.

The killing drought of the past summer has turned the thoughts of horticulturists to the advantages of irrigation, and among other methods the delivery of water below the surface—sub-irrigation, as it is called—is the subject of renewed discussion. Professor Taft, of the Michigan Agricultural College, writes to *The Florists' Exchange* that his experiments seem to show that there will be few seasons when one and a half inches of water, applied once a week, will not be enough for any crop in any soil. This amounts to something like 1,200 barrels an acre, but in many soils when sub-irrigation is practiced no more than one-half or one-third of this amount will be needed. Ordinarily a good deal less than a gallon to the square foot will be required if applied once a week in the driest season. When tiles are properly laid, that is, laid as nearly level as possible, water can be given in this way more easily and evenly than in surface furrows.

The oversupply of California fruit in eastern markets since the ending of the railroad strike early in August, has made prices so low as to be unprofitable to the growers, and last week but fifty-eight car-loads were sold in this city. The pears and peaches are much larger than those which came a few weeks ago. Plums are becoming less abundant. The market for dried prunes is promising since the partial failure of the prune crop in France. While the California crop is not large, this fruit will be profitable, since the associations have set the minimum price at six cents a pound. In a dispatch to the New York *Tribune* it is stated that no less than 409,720 pounds of dried apricots were shipped from San José last week. Tokay grapes are the most popular variety of this fruit, but these are yet comparatively small and lacking in high color. The first grape-fruit from Jamaica, of medium size and not fully ripened, is being offered at five dollars a box. The first Japanese persimmons from Florida have reached here later in the season than last year, and so far are of inferior quality. Cape Cod cranberries have been here for more than a week, and the best-colored bring $8.00 a barrel at wholesale. Huckleberries—probably brought out of cold storage—are still occasionally seen in the markets. Until last week fresh asparagus from New Jersey could be had at twenty-five cents a bunch. Crisp, well-blanched celery is abundant and cheap, and this comes from Long Island, New Jersey and the western states.

A bulletin on the effect of spraying nursery-stock with fungicides, designated as No. 7 of the Division of Vegetable Pathology, has just been issued by the United States Department of Agriculture. During three years, in the nurseries of Franklin Davis & Co., Mulliken, Maryland, more than a million Pear, Plum, Cherry and Apple trees have been treated under the direction of Dr. B. T. Galloway, and the practice has so commended itself to the proprietors that they do not hesitate to pronounce it equal in importance to cultivation or fertilization of the soil. Different leaf-blights attack both the seedlings and the budded or grafted stock of all these trees. Without going into details, it may generally be stated that the Bordeaux mixture increased the growth of the stock, especially of Pears and Cherries; that the application is thoroughly practicable; that it need not cost more than twenty-five cents a thousand trees the first year, and the same amount the second year, while the cost will be increased to thirty-five or forty cents the third year, making the entire cost of treating nursery-stock until the buds are two years old from eighty-five cents to a dollar a thousand. The result is better trees every way and a handsome profit. The experiments seem to have been conducted throughout in a thoroughly scientific way, the diagrams and figures are very helpful in illustrating the text, and the bulletin is commended to every grower of fruit-trees. It has often been suggested that the spray of the Bordeaux mixture seems to have a direct stimulating influence upon the growth of some plants apart from its value as a preventive of fungous diseases, and these experiments seem to bear out the theory, especially in the case of Pear-trees.